

CLAIMS

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- 5 1. Injection molding machine for processing plastics materials and other plasticisable compounds, having an injection molding unit (S) and a mould closing unit (F), which units are operated at least partially by electric driving units in the form of at least one linear motor, which has a rotor with magnets (25), disposed along a first cylindrical surface (11), and a stator with stator windings (26) disposed along an additional cylindrical surface (12), the cylindrical surfaces (11,12) of stator and rotor being concentrically disposed, and the stator windings (26) being substantially symmetrical relative to the axis of movement  
10 (a-a) of the linear motor, characterized in that a plurality of identically acting first surfaces (11) are stacked with a corresponding number of identically acting additional surfaces (12), the first and/or additional surfaces each being operable jointly in operative connection.
  - 15 2. Injection molding machine according to claim 1, characterized in that the magnets are magnets or separately excited coils with an iron core.
  3. Injection molding machine according to claim 1, characterized in that the electric driving unit is a regulated servo driving unit.
  - 20 4. Injection molding machine according to one of claims 1 to 3, characterized in that identically acting first or respectively additional surfaces are the outside and inside of a cylinder (60), and in that identically acting additional or respectively first surfaces are so disposed on two concentric cylinders (70,71) that the internal surface of the external cylinder (70)  
25 cooperates with the outside, and the external surface of the internal cylinder (71) co-operates with the inside of the cylinder (60).
  5. Injection molding machine according to one of claims 1 to 4, characterized in that the linear motor is cylindrical and is overlapped on the outside by an additional cylinder (17),  
30 which guides the faces of rotor and stator, which are moved towards one another, along a separate bearing face (19) by means of at least one mounting (18).
  - 35 6. Injection molding machine according to one of claims 1 to 5, characterized in that the stator windings (26) are divided along the axis of movement (a-a) into a plurality of separate electrical switching zones.

7. Injection molding machine according to one of claims 1 to 6, characterized in that cooling ducts (27), which lie behind or adjacent the stator windings (26) when viewed from the magnets (25), are associated with said stator windings, which ducts have their temperature controlled by means of a cooling medium.

8. Injection molding machine according to one of claims 1 to 7, characterized in that the electric driving unit is at least one of the following assemblies of the injection molding machine:

- closing mechanism for moving the movable mould carrier (13) towards the stationary mould carrier (14) and away from said stationary carrier and for applying the closing force if necessary,
- arrangement for applying the closing force,
- driving unit for fitting the nozzle (21) onto the injection mould (M),
- injection means for axially moving the feeding means(15),
- ejector unit (16),
- core pulling unit (K) on the injection mould (M),
- driving unit for a closure nozzle (V).

9. Injection molding machine according to one of claims 1 to 8, characterized in that the linear motor is employed as the closing mechanism, and in that there is space in the interior of the internal cylinder (71) to accommodate an ejector unit (16).

10. Injection molding machine according to one of claims 1 to 9, characterized in that the linear motor is employed as the injection means (E), the covering of the cylindrical surfaces (11,12), increasing during displacement of the feeding means(15) to the injection mould (M).

11. Injection molding machine according to one of claims 1 to 10, characterized in that the linear motor is employed as the closing mechanism, the covering of the cylindrical surfaces (11,12) increasing as the parts of the injection mould (M) approach one another.

*Added  
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